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and

which said wire probe extends, said values of L, p and d being conjointly selected so as to define a point lying substantially within acceptable regions indicated in Figures 4A through 4D.

REMARKS

At present, claims 1-9 stand rejected under 35 U.S.C. § 112 (second paragraph). Additionally, claims 1-9 stand rejected under 35 U.S.C. § 102(b) based upon the patent to Hamel et al. (U.S. Patent No. 6,404,211 issued June 11, 2002). In light of the amendments made herein and the comments presented below, both of these rejections are respectfully traversed.

With respect to the rejection of applicants' claims 1-9 under 35 U.S.C. § 112, it is noted that the Examiner's comments indicate that the Examiner does indeed himself understand the precise meaning intended by the language formerly employed. However, in order to ensure clarity without changing the scope of the claimed invention, applicants have amended claim 1 so as to refer to "acceptable regions indicated in Figures 4A through 4D rather than referring to a "volume." While the claimed invention as originally presented does indeed properly refer to a "volume," as the Examiner has in fact understood it, this "volume" refers to a region in the three dimensional space of acceptable parameters of L, p, and d. It does not refer to a physical space per se and to avoid any confusion with respect to an actual physical volume, applicants have amended claim 1 so as to remove any shred of doubt as to the scope and meaning of the claimed invention. Accordingly, with this understanding and for these reasons, it is respectfully requested that the rejection of applicants' claims 1-9 based upon the second paragraph of 35 U.S.C. § 112 be withdrawn.

Next is considered the rejection of applicants' claims 1-9 under 35 U.S.C. § 102 based upon the patent to Hamel et al. While there are certain similarities between applicants' claimed invention and this patent, there are in fact at least two very striking differences. In particular, there is nothing in the patent to Hamel et al. which would teach, disclose, or suggest the utilization of the combination of parameters L, p, and d as employed in applicants' claimed structure. Hamel et al. do not even appreciate that these parameters exist either alone or in combination and they clearly do not appreciate that optimal values of these parameters exist. Nonetheless, with respect to the acceptable regions defined by applicants' Figures 4A-4D, it is seen that applicants' claims do include recitations which are nowhere to be found in the patent to Hamel et al. Furthermore, there is nothing to be seen in the patent to Hamel et al. which would suggest the presence of the last set of recitations in applicants' claims 1-9 relevant to optimality. Accordingly, for this reason, it is respectfully requested that the rejection under 35 U.S.C. § 102 be withdrawn since it is clear that not all of the recited elements are present in the patent to Hamel et al.

Furthermore, and even more importantly, it is noted that the probe wire coating employed in the patent to Hamel et al. is a polymeric material, that is, an insulator. With respect to this, the Examiner's attention is directed to column 10, lines 5-8. In contrast, the Examiner's attention is also directed to the second to last recitation portion found in applicants' claim 1 which indicates that the probe wire of the claimed invention comprises a core material selected from the group existing of platinum and platinum iridium alloys and furthermore, that this core material is plated with material selected from the group consisting of nickel, gold, nickel alloys, and gold alloys. None of these materials are polymers. Furthermore, all of these

materials are in fact electrically conductive and not insulating. It is clear that the physical characteristics of a polymer such as a polymeric insulative coating is significantly different than the physical properties associated with a metal coating, particularly, a metal plated coating. For this reason, it is seen that the rejection of applicants' claims 1-9 under 35 U.S.C. § 102 cannot be sustained. It is therefore requested that the rejection be withdrawn for these reasons as well.

It is furthermore noted that because of the recitations found in the patent to Hamel et al. directed to polymeric coating materials for their wire probe, Hamel et al. do not in anyway appreciate the nature of the problem solved by the present applicants. Furthermore, even if Hamel et al. were to perceive of the existence of the indicated problem, their use of a polymeric coating for their wire probe would actually preclude them from ever finding a solution involving the L, p, and d parameters. Furthermore, it does not appear that it is even the case that Hamel et al. appreciate the nature or existence of the offset parameter L. For all of these reasons, it is clear that there is nothing in the patent to Hamel et al. which would render applicants' claimed invention obvious. In point of fact, the plain and simple teachings found in the patent to Hamel et al. teach away from the solution claimed since Hamel et al. do not teach a metal plated probe wire, but rather teach the utilization of a probe wire coated with a polymeric material. The physical properties of such materials are significantly different. Accordingly, those of ordinary skill in the art following the teachings found in Hamel et al. would be led away from that which applicants have claimed.

Accordingly, for all of those reasons above, it is seen that all of applicants' claims should now be allowed. Therefore, allowance of claims 1-9 is respectfully requested.

It is further noted that the present response does not require the payment of any additional fees due to the amendment herein to claim 1. It is also noted that the current response still leaves claims 1-9 present in the pending application.

Next, the Examiner's attention is directed to an Information Disclosure Statement submitted herewith, the published patent cited therein is included because of its apparent usefulness as background art. The Patent Office is hereby authorized to charge the appropriate fee under 37 C.F.R. 1.17(p) to IBM Deposit Account 09-0463 in accordance with the Transmittal of Information Disclosure Statement form.

Attached hereto is a marked-up version of the changes made to the specification by the current amendment. The attached page is captioned "**Version with markings to show changes made.**"

Accordingly, it is now seen that all of the applicants' claims are in condition for allowance. Therefore, early notification of the allowability of applicants' claims is earnestly solicited. Furthermore, if there are any matters which the Examiner feels could be expeditiously considered and which would forward the prosecution of the instant application, applicants' attorney wishes to indicate his willingness to engage in any telephonic communication in furtherance of this objective. Accordingly, applicants' attorney may be reached for this purpose at the numbers provided below.

RESPECTFULLY SUBMITTED,

JUN. 16, 2003

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DATE

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**VERSION WITH MARKINGS TO SHOW CHANGES MADE
TO THE SPECIFICATION AND CLAIMS**

Please make the following changes:

Paragraph [0023], pages 7 and 8:

Probe assembly 100 of Figure 1 also includes mask 130 which includes apertures 135 therein. Apertures 135 are of a size which is comparable to that of the outer diameter of probe wire 200 so that aperture 135 provides a guide for motion of probe wires 200 as probe wire tips 201 (see Figures 2 and 3) are urged against the wafer pads. Mask 130 is substantially flat, as is base 110. Mask 130 [110] is disposed at a substantially fixed distance from base 110 by means of sidewall support or supports 120. Support 120 comprises any convenient feature, mechanism or means for supporting mask 130 at a substantially fixed distance from base 110. Sidewall support 120 preferably comprises material selected from the following group: ceramic, plastic, composite or metal. The most important quality for selecting a material for sidewall support 120 is its dimensional stability over time and use. In preferred embodiments of the present invention sidewall 120 comprises a foam material. While sidewall support 120 may comprise physically distinct and separate parts, it is preferred that it be formed as an integral unit. Such a structure is meant to provide dimensional stability and constancy in terms of the overall height of probe assembly 100. Uniformity in height helps to assure corresponding uniformity in applied contact force. In this regard, it is recalled from above that controlled contact force is a desirable aspect of the present invention: too much force damages the wafer pads and too little force fails to produce a desirably low and consistent contact resistance.

In the Claims:

Claim 1. A probe assembly for making electrical contact with circuit elements on an integrated circuit wafer, or the like, said probe comprising:

- 5 a first support which is substantially flat;
- a second support disposed on said first member and providing a sidewall structure which extends substantially vertically upward from said substantially flat first support;
- 10 a substantially flat mask having at least one aperture therein, said mask being supported by said second support at a substantially uniform distance from said first support;
- 15 a flexible, self-supporting wire probe affixed to said first support, said wire probe having a pointed end which extends at least partially through said at least one aperture, said wire probe having two substantially oppositely directed bends therein so as to permit said wire probe to flex in response to force applied to said pointed end;
- 20 said wire probe comprising a core material selected from the group consisting of platinum and platinum iridium alloys and being plated with material selected from the group consisting of nickel, gold, nickel alloys and gold alloys; and
- 25 said wire probe having a core diameter d, a thickness, p, of concentrically disposed material, and an offset L, said offset being the horizontal distance between the point of affixation of said wire probe to said first support and the aperture through which said wire probe extends, said values of L, p and d being

conjointly selected so as to define a point lying substantially
within acceptable regions indicated [in the volume shown] in
Figures 4A through 4D.